

## **Historic, archived document**

**Do not assume content reflects current scientific knowledge, policies, or practices.**



## CULTURE OF DELPHINIUM HYBRIDS

### SEED

Delphiniums can easily be grown from seed which can be sown practically any time of the year according to the climatic conditions, equipment available or time of flowering desired. Under California conditions for early Spring flowers sow from June to September, Mid-summer blooms December to January, and for Fall blooms February to April. In regions with severe Winters, the early Summer sowing from June to July is recommended so that the little plants are well established before the Winter sets in. Otherwise, the most practical time to sow is early Spring. Seed can be kept in good condition for several years if kept in air-tight containers in a refrigerator. In fact it is practicable even with fresh seed to place it between two moist blotting papers and leave it directly under the freezing compartment of the refrigerator for at least a week to induce a higher germination. For best results sow in flats in a mixture of two-thirds coarse leaf-mold and one-third loam, covering slightly with the same mixture and moisten thoroughly. To prevent evaporation, cover the flats with newspaper and glass until germination takes place. Immediately after the young plants begin to appear, both the glass and the newspaper should be taken off, however, the plants should be kept shaded and kept moist constantly.

### GERMINATION

If the seeds do not germinate 100% and the flats are exposed to strong light immediately after the first few plants have appeared the rest may not germinate at all. Artificial heat can be used for germination in early Spring and it will give far better results than the natural heat in Summer. To get the best results in germination, bottom heat is necessary with a cool temperature overhead. This is well supplied under glass in early Spring, however, in Summer due to hot weather conditions it is usually the opposite and this is why many people have failures even with the very freshest seed. At temperatures of 85 degrees Fahrenheit and up the germination is often very poor and what germinates stands a very good chance of being simply cooked. To prevent this, after the seeds are sown in flats place them on the floor in a cool room or shed where they can be kept dark for the first ten days until germination takes place then give light and fresh air but keep them well protected against any drying out. We have repeatedly checked on seeds which were sown under greenhouse conditions in Summer or the cool shed method or a well shaded lath house and the results in each case were from 20 to 50 per cent better under lath house conditions than under the greenhouse conditions. Under slow cool germination practically every seed will gradually come up, under quick hot conditions only a few will germinate, the rest remaining dormant in the soil.

DAMPENING OFF will occur only if flats are kept too wet in the greenhouse without proper ventilation. Watering with a weak solution of chlorox, about four to six per cent, we have found to be the best cure and preventive.

### TRANSPLANTING

When second leaves are developed and before plants are too crowded, prick in flats three inches apart in a mixture of two-thirds sandy loam and one-third leaf mold. Keep shaded for two or three weeks, then gradually give more light and when larger, harden off in full sun-light before planting out in permanent position about two or three feet apart.

Open sunny location is necessary for best development. In shade they will grow too spindly with only small flower spikes. If too close to walls, they will Mildew more than in the open.

The ground should be well prepared for planting. A liberal application of well-rotted cow or sheep manure with a sprinkling of bone meal mixed with the soil which should be dug a foot deep, will produce fine growth. Heavy wet soils will require a slight addition of lime. Good drainage and uniform supply of moisture during the growth is essential.

## FEEDING

When the first crop of blooms has faded, cut the flower spikes off just above the foliage and keep slightly dry for two or three weeks to give the plants time to rest before the new shoots appear above the ground. When this takes place, cut the rest of the old stock off, sprinkle a teaspoonful of Ammonium Phosphate around each plant, rake it into the soil slightly and water thoroughly. From the new shoots appearing from the ground select two or three of the strongest and break the rest out. The remaining ones will develop into fine spikes again. Do not force a new growth late in Autumn, rather keep the plants on the dry side because if forced into bringing a third crop late in the season the plants will soon exhaust themselves and gradually die out.

## DESIASES

Mildew will attack plants grown close to a wall, or planted thickly together, especially later in the Fall. The new "Ortho Mildew Spray" originated by the The California Spray Chemical Corp., 2082 Center Street, Berkeley, California, diluted with water to a four per cent strength, will control it perfectly. This spray not only acts as a preventive but will cure heavily affected plants, as it kills mildew instantly. It is a light oil and can be applied at any time without burning the foliage to which it gives a nice shiny appearance.

## DELPHINIUM CARDINALE

Sowing directions for the scarlet larkspur differ slightly from that for the garden hybrids. They cannot be transplanted with bare roots when growing. Sow either in small pots and plant out later without disturbing the root system or sow in flats in peat with slight addition of sand only. Peat is the only medium that will stick to the roots so they may be safely transplanted in the field.

## CULTURE OF GERBERAS

Upon receiving the plants cut all foliage two-thirds back and plant in open ground in any location except heavy shade so that the crown is on the level with the soil. If it is buried deeper, it results often in crown rot and the plants may die out entirely. Perfect drainage is most important. They are best if grown in raised beds by themselves.

Sandy loam is the best soil for them; however, they will grow almost in any type of soil provided it drains well.

Slight addition of cow or sheep manure with sprinkling of bone meal, well mixed before planting soil will help. Excessive use of fresh manure should be avoided. Once established they are best if left alone for years. If moving and dividing is desired, it should be done in early Spring, February or March.

Old established clumps can be kept vigorous by a small addition of bone meal to the ground in early Spring. Sprinkle a handful around each plant and rake into the ground. Then water thoroughly.

## SEED

When growing plants from seed, sow either in flats or open ground in light sandy soil. Cover only slightly. Keep moist and heavily shaded until germination starts (about ten days). Then give a little more light but never full sunlight. Transplant about three inches apart when the second leaves are developed. When fairly large, gradually harden off and plant out.

We offer only guaranteed fresh seed from our breeding stock. The hybrid Gerberas do not come true to color from seed. There is always considerable variations and hardly two of them will be alike. Hence the seed can be supplied only in mixture.

## PESTS

Gerberas are subject to crown rot. This is a fungus disease for which there is no cure known and the infection ruins the plant often within a few days. Deeply buried crown and heavy watering without adequate drainage causes most of this trouble.

## CULTURE OF GLOXINIAS

Native of South America requiring warm moist temperatures; flowering season from March to November.

### SEED

Gloxinias can be easily grown from seed. Sown from January to August, according to when the flowering is desired. If well handled they will produce good specimens from five to six months. The culture is exactly the same as growing Begonias from seed. For good results they should be grown under glass all year around with slightly higher temperature than Begonias. The soil should be very light. Three-fourths coarse leafmold and one-fourth peat will produce very quick growth. Bone meal mixed with soil before planting and additional feeding with liquid manure as for Begonias when buds begin to develop will give good results.

### TUBERS

For developing large show specimens, tubers should be used, as seedlings will form only few flowers the first year. They can be started in the same way as described for Begonias.

Warm and moist temperature should be maintained in the greenhouse during the younger stage of the growth, somewhat cooler and well ventilated when in bloom. If kept in dry temperature they are subject to aphis and thrip which destroy the young buds entirely. Occasional fumigating with nicotine before the pests are too noticeable will prevent them from doing too much damage.

After the blooming period the foliage turns yellow, they should be dried up gradually and handled the same as Begonias. Storing room for tubers should be frostless.

## CULTURE OF TIGRIDIAS

Tigridias are natives of Mexico and Central America, requiring moist warm temperature during growth. Plant in well enriched soil from February to May about two inches deep. Always plant several bulbs of one variety to make a nice flowering clump. The flowers appear in succession each lasting only a day over a period of two months.

In warmer regions without heavy frost they can be left undisturbed in the ground for years. In cold regions they should be dug up before the ground freezes and dried perfectly before storing. Cool airy and frostless storage is necessary. The best way is to take the plants, tie up the dry stems, and hang them up or cut the stems off and cover the bulbs with ashes. If not properly dried, any slight moisture during storage will permit forming of a mold which will destroy the bulbs.

## CULTURE OF MONTBRETIAS

The new strain of Earlham Montbretias requires somewhat richer cultivation than the old small flowered types of Montbretias. The bulbs are distributed from December to March and should not be kept in a dry state longer than necessary. As a rule, under California conditions if transplanting is desired they can be dug up in Autumn and replanted immediately. In a region where deep frosts prevail, it is advisable to lift them after the frost has cut down the foliage leaving the soil adhering to the roots and store them in the basement where they can be kept thoroughly dry until Spring when planting is again possible. For good results, the soil should be dug up quite deeply, well enriched with bone meal and old well rotted manure before planting. Fresh manures if used are often more harmful than beneficial. No additional feeding is required during the growth, but a continuous supply of moisture is necessary until the flowering season is over, after which time they can be kept on the dry side so the tubers will be well ripened when the time for lifting comes in. They multiply very rapidly if grown in light soil; in heavy soils they will produce strong shoots but the increase is much slower.

## CULTURE OF TUBEROUS BEGONIAS

Natural State, Central and South America.

Planting Time; January to May. Flowering time, May to November.

### SEED

Sow from January to March. Place one or two inches of gravel in flats or seed pans, to insure good drainage, over which place a fairly coarse mixture of two-thirds leaf mold and one-third peat about one inch deep. Smooth the surface with the same mixture finely sifted, not more than one-eighth inch deep but do not press it down. It is necessary for the surface to be of a spongy character so that when the seed germinates the young roots can get into it. If surface is too fine and packed, the seedlings will often fall over as the young roots are unable to get in.

Place the pans in shallow water until thoroughly soaked up from below, then broadcast the seed. Cover with glass and a sheet of paper or keep it in the dark until germination takes place. Night temperature of 65 to 75 degrees Fahrenheit is necessary for quick germination. Lower temperature than 65 degrees will considerably slow up germination with poorer results.

As soon as germination takes place, take the paper off and in three or four days lift the glass also, otherwise the little seedlings will get too spindly. Warm temperature, protection from direct sunlight and uniform moisture are absolutely necessary. Even a slight drying out of the surface will be fatal to the delicate young plants. Very gentle overhead watering should be used when necessary.

### TRANSPLANTING

When the third leaves are developed, transplant one inch apart in flats containing the same mixture as for sowing. No finely sifted surface is necessary any more. Do not put more than one to one and one-half inches deep of soil in your flats. Deep flats filled with several inches of soil are not necessary. Usually they do not drain well, soil will get sour and checking of the growth will be the result. Before they get too crowded, transplant in the same manner again farther apart until strong enough to be planted out in the open or if desired potted up

If planting in open ground, enrich the soil liberally with well rotted cow or sheep manure and a sprinkling of bone meal. If soil is heavy add plenty of either leafmold, peat or sand or a mixture of all so that the ground will be light and porous. Plant in a shaded position such as under the trees or north side of the house where direct sunlight cannot reach them. Keep well watered, fine overhead sprinkling preferred.

### FEEDING

If very strong growth is desired, additional feeding can be given when the plants reach approximately 4 to 5 inches in height either by the sprinkling of one-half teaspoonful of Ammonium Phosphate around each plant or approximately a heaping teaspoonful of cotton seed meal which should be worked into the soil slightly not too close to the stem. This dose will usually prove sufficient for the whole season but can be duplicated again later in the Summer when the plants are in full bloom which will prolong the flowering season to some extent.

### DIGGING AND STORAGE

In Autumn when the foliage turns yellow, withdraw the water gradually and when all growth dies down entirely, take out, wash off all soil, taking care not to bruise the tubers, dry in sunlight for a day or two until thoroughly dry, then store in open flats in cool dry place. See that all particles of the old stem are removed until healthy tissue shows, otherwise if left on they will decay and destroy the tuber.

### TUBERS

If early flowering is desired, place tubers during January and February in a warm place in open flats, moisten slightly once in a while and gradually as they begin sprouting buds, plant in flats filled with peat only about three inches apart according to size of the tuber, so that they are only slightly covered. Keep uniformly moist but not too wet in a warm place well lighted until three or four inches of growth develops, then plant in pots or permanent position as desired. The front is always where the tips of the leaves are pointing. Often if dormant tubers are planted in open ground, especially if it is cold and too wet, numbers of them rot and the planting will be uneven, some coming earlier, some later, and facing haphazard way. Started first in peat, they will develop splendid root systems which are necessary for developing good specimens.



VETTERLE & REINELT — HYBRIDIZING GARDENS  
CAPITOLA, CALIFORNIA

For pot culture any rich light soil is suitable. Mixture of two parts of coarse leafmold, one part of loam will bring good results. It is important for the mixture to be of light coarse character so that it will drain well. Finely sifted soil will pack down without permitting the circulation of air, hence only a moderately good result can be expected.

Perfect drainage is most important, and to provide it, place at least one inch deep of gravel on the bottom of the pot.

When potting up use smaller pots in beginning and move later into larger pots before they are pot bound. If tubers are well started in peat with considerable root system, they may be planted immediately in large pots approximately from six to eight inches for one year old tubers. Older, larger tubers will of course require larger pots. Very great care with watering is necessary when they are planted immediately in large pots. Keep the surface only moist in the young stage until the growth is well developed and then heavier watering is justified. If you over water the soil in the begining, it will become sour, the plants will make only a sickly growth, buds will fall off before blooming, and the plants may die out entirely. This is true especially of Hanging Basket Types. If very strong growth is desired, it will be necessary when the plants are established in the final pots and have at least four of the leaves fully developed, to water once a week with liquid manure.

A number of quick acting commercial fertilizers can also be used. One of the safest is cottonseedmeal which we are using now almost exclusively as it gives very good results. Half teaspoonful once or twice during the season, sprinkle around the edge of the pot (not too close to the stem) will be sufficient. Heavier doses will do more harm than good, often causing distortion in the flowers or burning up the roots, destroying the plant entirely. Lath houses with strong muslin roofs are a very suitable place for development of show specimens in warm regions where greenhouses would be too warm. If grown in a greenhouse, thorough ventilation day and night must be available. Openings in the walls under the benches will give good circulation of air. On hot days heavy shading and sprinkling the walks with water will keep the temperature down. 65 to 80 degrees Fahrenheit is the most ideal temperature, for as the cooler and slower they develop, the finer and larger the flowers will be. Higher temperatures produce quick weak growth and the flowers do not develop as good size and as lasting quality.

Do not prune Begonias. Any open wound will be immediately attacked by fungus, especially when crowded without good air circulation. If you cut the flowers, cut only half of the stem. The other half will mature and fall off itself without leaving a wound.

If well balanced hanging baskets are desired, pick off all buds until the growth is enough advanced and the branching develops. Some hanging types are quite strong growers and if only one to three stems are on the tuber, they should be pinched off when first bud appears to induce the side shoots to develop.

## PESTS

Occasionally Begonias are attacked by aphis and thrip in the greenhouse if kept in dry close temperatures. Fumigating with nicotine on two or three alternate evenings will control these pests easily.

Very rarely they are also subject to mite attacks. These are very small and cannot be seen without a lens. The first sign of their presence are brown rusty streaks on the young shoots and foliage, deforming and destroying the season's growth entirely if not checked.

Infected plants should be isolated immediately. Thorough spraying with Volck will check this pest.

## FAILURES

The most common failure in Begonias is the falling off of buds before they develop which is caused either by the plants being grown in too small pots without a sufficient amount of food, severe drying out or severe overwatering. In hot weather the flowers develop too rapidly and the plants by drawing much more water from the soil tends to throw off the buds. Abundant growth with little or no flowers is the result of too heavy shade. Curled and shiny foliage is a sign of too strong an exposure to the sun. The most damage is done by over feeding, the first signs of it is a soft glassy texture of the foliage curling under gradually, wilting and dying off.

## CULTURE OF ANEMONES AND RANUNCULUS

Both the Anemones and Ranunculus are charming Spring flowering bulbous plants of easy culture. Anemones require rich light soil, protection against too strong sunlight and a continuous supply of moisture during the growing period. Any drying out even for short times is harmful to proper development. The little bulbs are rather enlarged roots and care should be taken to plant them in a correct position. Often people who have not handled them before are at a loss to know which is top and bottom. The bottom is usually pointed, remaining a particle of the old root; the top is recognized by a fuzzy character, a left over from previous growth. They should be planted so that the top of the tuber is approximately one inch below the surface. In California or similar climates they can be planted from September to the end of January to form early Spring flowers. When the first few leaves develop, additional feeding can be given if very strong specimens are required. One of the easiest methods is to simply make a small trench around each plant and sprinkle approximately a teaspoonful of cotton seed meal in it, cover again with soil and keep thoroughly moist. Other commercial fertilizers such as Ammonium Phosphate, etc., can be used instead with good results. In cases of concentrated salts such as Ammonium Phosphate for instance, a pinch is sufficient if sprinkled around each plant twice during the growing season.

Anemones will bloom almost continually as long as they get a good supply of moisture, but it is practicable to let them dry up gradually in June or July to give them a good rest and keep them healthy. They may be left in the ground where they will grow for years if undisturbed. In colder regions the planting should be done in early Spring when the ground becomes sufficiently warm, otherwise the cultivation is exactly the same. In late Summer or Autumn when they become dormant they should be dug up and stored in a dry cool frostless place. If grown from seed, the best method is to sow thinly in flats in a mixture of leafmold and garden soil such as is used for sowing any other annuals or perennials. When the plants are sufficiently large, they can be planted directly in open ground and treated the same as bulbs.

## RANUNCULUS

The culture of Ranunculus is very similar to that of Anemones except that they will stand more sunlight. Eastern exposure is usually the most desirable. The tubers are in reality a clump of enlarged roots and should be planted with the points down so the top is approximately one inch below the surface. The ideal soil for Ranunculus is rich sandy loam heavily enriched with any kind of well rotted manure, however, they will grow well in practically any kind of soil provided they get a good supply of water and some additional feeding. When the growth reaches approximately two or three inches, make small trenches between the rows of plants, sprinkle liberally with either cotton seed meal or fish meal approximately a teaspoonful to each plant and again covering with soil, keeping thoroughly moist at all times. This dose can be repeated again six or eight weeks later when the buds are beginning to appear after which no additional feeding is necessary. The planting time for regions where mild Winters prevail begins from September until December. The earlier they are planted, the larger the specimens will develop. Late plantings are usually forced by the Spring warmth into quick blooming without being able to form sufficiently large plants. In regions with severe Winters the tubers can be kept in a dry cool place until early Spring then planted when the ground becomes sufficiently warm. Anyone who wishes to grow show specimens of Ranunculus should keep in view two points; heavy feeding and constant moisture. In dry poor soils, even the finest varieties of Ranunculus will be only poor small double or single scraggly specimens. If growing from seed, sow from September to November in flats in a mixture of sandy loam or any light soil and transplant directly into the open when the plants become sufficiently large. If planted early they will form large flowering plants the same season.

## PESTS

Both Anemones and Ranunculus are practically free from any kind of pest but the young growth is dearly loved by birds. In small gardens it is advisable to cover beds with wire until the plants are sufficiently large, otherwise, some friendly sparrow will make a very short story of them.

